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United States Department of Agriculture

ALLEGHENY FOREST EXPERIMENT STATION*

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SEED FALL OF SHORTLEAF PINE

SD11.5

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Shortleaf pine of seedling origin forms the most valuable upland timber stands in the Pine Barrens of southern New Jersey. State foresters estimate that growth on these stands is at least seven times more valuable than the growth of neighboring stands composed of sprout oaks and pines. The possibilities of increasing the area occupied chiefly by seedling pine stands is therefore of major importance to the timberland owners in this region. Seed trees are common throughout a large portion of the oak-pine lands. To determine how effective these might be, a study of seed fall was carried out during 1936-39. Seed fall began the last half of October, a week or so after the first frost, and continued until April.

Percent of Seed Fall by Months

Year	October	November	December	January	February	March	April	TOTAL
1936-37	2.0	69.7	15.6	2.3	1.1	3.9	5.4	100.0
1937-38	14.0	71.2	10.0	2.4	1.6	0.0	0.8	100.0
1938-39	10.6	70.1	14.8	2.8	1.4	0.2	0.1	100.0

The bulk of the seed, 69%, fell during the first month and 90% during the first two months. The peak of fall occurred between November 1 and 20, when as much as 10% of the yearly total fell in a single day.

Rain and possibly high relative humidities reduced seed dispersal. A rain of 0.02" caused a partial closing of open cones and one of 0.15" complete closing. Response to unfavorable weather was very rapid. During the clear days of October 25 and 26, 1937, seed fall was near its peak. Rains on the next two days apparently prevented the release of a single seed; but substantial seed fall was resumed during the following five-day period. Temperature and wind velocity had little influence on shortleaf pine seed fall. Wind direction, on the other hand, was highly important in that west or northwest winds occurred during intervals of clear weather, while east winds were accompanied by rain. As many as 28 seeds, the equivalent of 76,000 per acre, were caught in traps located 2 chains east of seed trees and 14 in traps 4 chains southeast of trees, whereas a trap only one chain west of seed trees caught but 3 seeds.

Based on the catch of individual traps, total fall per acre for the three-year period varied from 8,000 seeds to over 925,000, which indicates that lack of seed is not the primary cause for the absence, or small amount, of natural pine seedlings in many of the present oak-pine stands of South Jersey.

* In cooperation with the University of Pennsylvania.

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